

Figure A37-1 Methodology

Following is a brief description of the sources and methods for the data in the Environmental Screening Worksheet.

The data in the worksheet is based on the final segments retained in the routing study, as described in the Routing Overview in the Application text. Some of the segments could be built as either double circuit or parallel to an existing line. All double-circuit options would use single-pole structures. The parallel segments and segments using all new right-of-way could be built using either H-frame structures or single-pole structures. The H-frame construction requires a 150-foot wide right-of-way, while the single-pole construction requires a 120-foot wide right-of-way. The environmental data in the tables is based on the requirements of the H-frame construction for the parallel and all-new segments since the H-frame right-of-way requirements are greater and thus represent a worst-case scenario.

Homes and Other Facilities

Buildings were identified initially through interpretation of aerial photos (November/December, 1998 and May, 1999). The building or facility type was identified in the field. The location and type of building were verified using U.S.G.S. topographic maps and field reconnaissance by helicopter, automobile, and foot. The distance between buildings and the intended centerline was measured using enlargements of aerial photos at 1"= 800ft and 1"= 500ft scale. In the case of agricultural outbuildings, only the single nearest building for each farmstead was counted. This information is summarized in Figure A16.

Zoning Categories

The length through established zoning categories was based on zoning maps received from counties, townships and cities within the project area. The categories were compiled as residential, commercial/industrial, conservancy/recreational, and agricultural. Not all counties used all of the categories. Conservancy/recreational represents open space, recreation or sensitive areas that have been identified by that jurisdiction. Some counties specifically identified agricultural zones, some counties applied the agricultural designation to all land not in a different category, and some counties did not designate agricultural lands in their zoning at all.

Agricultural Lands, Wetlands, and Forest Lands

The information in the Route Summary; agriculture, wetlands, and upland forest, (Figures A12, A17, A18, and A21), was drawn from the Wisconsin Department of Natural Resources wetlands inventory data and WISCLAND land cover data. These data sources were selected in consultation with the PSCW staff. Editing and analysis were accomplished using ARC-INFO and ArcView GIS programs. The WISCLAND data was derived from LANDSAT Thematic Mapper satellite imagery acquired during 1991 through 1993.

Figure A37-2 Methodology

The analysis involved a combination of the two databases. First the GIS specialists projected the segments onto the wetlands and land cover files and established the appropriate widths for each type of right-of-way.

The agriculture analysis was performed using the land cover data. The analysis was performed after deleting the forested wetlands data from the land cover data. The categories for agriculture include Row Crops/Hay, Pasture/Grassland, Ginseng, and Christmas Tree Farms. The specialty crops such as ginseng and christmas tree farms were identified by reviewing aerial photos. The other categories were based on the applicable categories within the WISCLAND database. The database includes a specific category for row crops. Row crops include all cultivated lands. The data for hay includes all forage crops identified in the imagery. Pasture and grassland data were taken from the database category called Grassland. The category includes pasture, timothy, CRP land, and all other grasslands. In agricultural areas, this category captures mostly pastureland. In forested areas, this category often captures open grasslands that may not be used for agricultural purposes. The reader should bear in mind that the total for agricultural disturbance includes grassland, and that the data may represent mostly grassland in forested areas.

The analysis of wetlands included the breakdown by type for emergent/meadow, shrub/scrub, and forested wetlands. A separate analysis was performed based on whether the wetland was in an existing transmission line right-of-way or not. If the right-of-way would have to be widened, the additional clearing was counted as new right-of-way.

For the forest analysis, the objective was to quantify upland forest only, because forested wetlands was counted in the wetlands data. In order to accomplish this separation, the two files were combined and forested wetlands areas were deleted from the land cover data. The analysis was then performed on the remaining data. The forest types were taken from the categories in the land cover data. Pine plantations were identified separately by reviewing aerial photos. Since the location of pine plantations were identified on the aerial photos, rather than either of the two databases, the acres for the plantations were not added into the total for upland forest. The pine plantations could be located in either forested wetland, or agricultural areas.

Threatened and Endangered Species List

The list of species was compiled from data provided by the Wisconsin Department of Natural Resources. The analysis was based on the potential impact of a transmission line on each species. The list of species is shown in Figure A14.

Right-of-Way Requirements

Widths of right-of-way required for construction of the new transmission line under different circumstances were based on engineering design requirements. The location next to an existing right-of-way reduces the amount of right-of-way required. Right-of-way requirements are shown in Figure A2-1. Right-of-way sharing is defined as any place where the new transmission line right-of-way would overlap with an existing right-of-way of another transmission line, railroad, pipeline, or road.

Figure A37-3 Methodology

Adjacent Rights-of-Way

Utility corridors near possible segments were listed in separate tables. The new transmission line right-of-way may or may not overlap with these corridors. The segments adjacent to transmission lines, railroads, pipelines, or roads are listed along with the nearby corridor in Figures A8, 9, 10, and 11.

Segments Adjacent to Existing Transmission Lines

Existing lines were identified using the Wisconsin Utility Map, Map 3 – Major Wisconsin Transmission Line Owners and Utilities Service Territories, the Northern States Power Company System Operation Department Map and WPS Electric System Map. The information is shown in Figure A8.

Segments Adjacent to Railroads

Railroads were identified using USGS 7.5-minute topographic maps, the Delorme Street Atlas 6.0 version and the Wisconsin Railroads 1998 map produced by the Bureau of Planning, Wisconsin Department of Transportation, September 1998. The information is shown in Figure A9.

Segments Adjacent to Pipelines

Pipelines were identified using USGS 7.5 minute topographic maps and the Lakehead Pipeline USGS topographic Maps of Wisconsin (6A; 34”) Existing Pipeline. The information is shown in Figure A10.

Segments Adjacent to Roads

Roads were identified using USGS 7.5-minute topographic maps, county plat books and the 1998 Wisconsin Atlas & Gazetteer. The list is shown in Figure A11.

River and Stream Crossings

Rivers and streams were identified using USGS 7.5-minute topographic maps. Any water course labeled a river on the USGS was so listed. All other named water courses, such as creeks or streams, were listed as streams. The list is shown in Figure A19.

Public Lands

County, State and Municipal lands were identified using county plat books for the project area. Identified areas were measured to determine the length of the segments passing through designated lands. The information is provided in Figure A12.

Airfields

The location of airfields was identified using information from the 1998 Wisconsin Bureau of Aeronautics, USGS 7.5-minute topographic maps, aerial photos, and field reconnaissance. Public input was also a source for the identification of some small grass fields. The information is provided in Figure A22.

Figure A37-4 Methodology

Distribution Lines

The locations of 1-phase and 3-phase distribution lines were identified for 115-kV segments only, which are primarily in the Tripoli to Rhinelander portion of the project. Locations were plotted and measured on USGS 7.5-minute topographic maps based on field reconnaissance. The information is provided in Figure A24.

State, County or Municipal Parks

Parks and municipal areas were identified using USGS 7.5-minute topographic maps, the 1998 Wisconsin Atlas & Gazetteer and field surveys. A summary of the information is provided in Figure A16.

Recreation Areas

Recreational areas were identified using USGS 7.5 minute topographic maps, the 1998 Wisconsin Atlas & Gazetteer and field surveys. State and county areas were also identified using official maps and guides for areas such as the Ice Age Scenic Trail, St Croix Riverway and the Chequamegon National Forest. A summary of the information is provided in Figure A16.

Scenic Rivers Crossed

The only federally-designated scenic river in the project area is the Namekagon River. The river crossings were determined by identifying the locations where segment lines intersect with this river as shown on USGS 7.5-minute topographic maps. General Management Plans for the Upper St Croix and Namekagon Rivers and the 1998 Wisconsin Atlas & Gazetteer were used to identify critical areas of interest. A summary of the information is provided in Figure A12.

Visual Simulations

Three visual simulations were prepared to indicate the visual change that could occur at the crossing of the Namekagon River with the construction of the project. The simulations were produced using computer graphics based on the proposed double-circuit design of the line on Segment 346x. The simulations show both the existing crossing and how it could look if the line is rebuilt. See Figure A20.

APPENDIX A-ROUTE SUMMARY DATA

Following is an explanation of how the data was calculated for Figure A12.

Total Length

Lengths were derived from digital USGS 7.5-minute topographic maps. Measurements were rounded to the nearest 100 feet.

New Right-of-Way

Lengths in feet were based on the length of the centerline that would be placed on new right-of-way as opposed to being placed within the right-of-way of an existing transmission line. The acres were based on the relevant design width for the segment. The calculations were rounded to the nearest 0.5 acres in keeping with the level of accuracy of the length data.

Figure A37-5 Methodology

Existing Rights-of-Way (Double-circuit)

The lengths of existing rights-of-way were based on the length of line that would be rebuilt as double circuit. The acres of existing rights-of-way were based on the width and the length of the existing right-of-way.

Parallel Utilities

The length parallel to other utilities includes existing transmission lines, roads, railroads, and pipelines. Parallel is defined as the new right-of-way that would either meet or overlap the existing right-of-way. In cases where a segment may be built as either a double-circuit or a single-circuit parallel to that line, the double-circuit option was measured as existing and the parallel circuit was measured as new right-of-way. If an existing transmission line is adjacent to another utility, such as a pipeline, the double-circuit option was considered parallel to the pipeline, while the single-circuit option was considered parallel to the existing transmission line.

Right-of-Way Sharing

This calculation was based on the amount of right-of-way that the new line would share with other existing rights-of-way. The amount shared was calculated by subtracting the amount of new right-of-way required from the total potential right-of-way needed if the line were built using the appropriate full width of right-of-way. For example, a 345-kV line placed next to a pipeline would require a right-of-way width of 132 feet rather than the full 150-foot wide right-of-way. Subtracting 132 from 150 for the width of the right-of-way yields 18, divided by 150, which equals 12 percent. The percentages were rounded to the nearest whole number.

Homes

The homes data are a consolidation of data from the Homes and Other Facilities table, Figure A16.

Zoning Data

The lengths for zoning categories were measured from land use zoning maps as described above.

Agricultural Disturbance

Existing disturbance is the length of existing transmission line that crosses agricultural lands as indicated by the land cover data. The length is based on the centerline of the segment. The acres are based on the applicable length and width of the right-of-way.

The length of new agricultural disturbance is based on the length of the centerline that is on new right-of-way. The acres of new agricultural disturbance include both all new right-of-way and any expanded right-of-way associated with the use of an existing right-of-way. To avoid double-counting length where a segment involves rebuilding an existing right-of-way, the length is recorded under existing disturbance only. The amount of expanded right-of-way required in these cases, however, is recorded under acres of new disturbance.

Figure A37-6 Methodology

Forested Wetlands

The data for forested wetlands data were compiled from the Wisconsin Department of Natural Resources wetlands data, as described above. For this table the data was grouped into two categories, forested and non-forested. The calculation of existing and new wetlands was performed in the same manner as the agricultural data. Totals for forested and non-forested wetlands are found in Figure A13, Route Totals.

Upland Forest

The data for upland forest were derived from the WISCLAND Land Cover database as described above. The upland forest does not include forested wetlands. The calculation of existing and new upland forest was performed as described under agriculture.

Public Lands

The lengths through State Lands, County Forest Lands, and other County or Municipal Lands were measured from plat maps as described above. Total Public Lands is the sum of the three categories.

Existing and New River Crossings

Existing river crossings are locations where existing facilities, such as pipelines, roads, railroads, or transmission lines, currently cross a river. New river crossings are locations where there are no other facilities present.